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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,882	09/08/2003	William Gobush	5222-054-US01	8086
79175	7590	09/29/2011	EXAMINER	
MURPHY & KING PROFESSIONAL CORPORATION 1055 Thomas Jefferson Street, NW Suite 400 WASHINGTON, DC 20007			RUSSELL, MATTHEW S	
ART UNIT	PAPER NUMBER			
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/656,882	GOBUSH, WILLIAM	
	Examiner MATTHEW RUSSELL	Art Unit 3716	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11 July 2011.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) Claim(s) 1-29 is/are pending in the application.
- 5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 1-29 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 - 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 - 3) Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
 - 5) Notice of Informal Patent Application
 - 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-6, 8-27 are rejected under 35 U.S.C. 103(a) as being obvious over 5,575,719 (Gobush, hereinafter Gobush '719) in view of 6,241,622 (Gobush, hereinafter Gobush '622) and U.S. Pub No. 2003/0095186 A1 to Aman et al (Aman).**
3. With respect to claim 1, Gobush '719 discloses an apparatus for analyzing the kinematics of golf equipment (abst; Fig. 4; generally; col. 1:30-43), comprising: a camera system (fig. 4, 4); a first strobe lamp (fig. 4, 21-24; shows multiple flash lamps; col 3:33-54); a second strobe lamp (fig. 4, 21-24; shows multiple flash lamps; col 3:33-54) configured and adapted to provide a limited wavelength of light (col. 3:30-53; infra red may be used); a club having one or more selectively positioned markers (fig. 5, 20a-c; col. 3:3-33); and a ball having one or more selectively positioned markers (fig. 5, 25g-l; col. 3:3-33).
1. Gobush '719 does not explicitly disclose wherein the second strobe lamp is positioned off axis from the axis of the camera system. In a method and apparatus to determine golf ball trajectory and flight similar to that taught by Gobush '719, Gobush '622 teaches a strobe light off axis from a camera system

- (see fig. 2, strobe light 42 is off axis from camera 36 and/or camera 38; see also col. 3:45-61; 4:32-50). Therefore it would have been obvious to one skilled in the art at the time of the invention to include a strobe lamp off axis from a camera system because it is simply applying a known technique to a known device ready for improvement to yield the predictable results of increase and/or decrease the intensity of light reflecting off an object based on an angle at which the light strikes the object.
2. Gobush '719 does not explicitly disclose using a filter and wherein the system is operable to differentiate between markers (claim 1); however, in a camera system to track multiple objects similar to that of Gobush '719, Aman discloses the use of filters with a camera system to pass narrow bands of specific frequencies of energy (Para. 59; fig. 14a, 124f; fig. 15a). Further, Gobush '719 does not explicitly disclose retroreflective or fluorescent markers (claim 4). Aman discloses using retroreflective and/or fluorescent markers to track multiple objects and the system operable to differentiate between markers (abst; figs. 1-12; at least Para. 59). Gobush '719, does not explicitly disclose filtering strobe lamps to achieve limited wavelength (claim 5), however, Aman discloses modifying existing lamps to emit non-visible frequencies, i.e. filter existing lamps (abst; figs. 1-12; 526).
3. Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the golf equipment tracking system of Gobush '719 to include camera/lamp filters and the different types of markers to provide the ability to

track multiple objects at the same time, because Aman teaches that tracking systems like that of Gobush '719, increase their utility with the addition of filtering and different types of markers by providing the ability to track specific chosen energy (at least para. 46).

4. With respect to claim 3, the modified Gobush '719 reference discloses wherein said second strobe lamp is positioned off axis from the axis of the camera by between about 10 and about 20 degrees (Gobush '622; see fig. 2, strobe light 42 is off axis from camera 36 and/or camera 38; see also col. 3:45-61; 4:32-50; wherein '622 teaches the angle between cameras is 10-30 degrees and the strobe light is between the cameras therefore the camera is off axis from the strobe lamp by between 10 and 20 degrees).
5. With respect to claim 6, the modified Gobush '719 reference discloses wherein said second strobe lamp is a limited wavelength light source (col. 3:30-53; infrared lighting used).
6. With respect to claim 10, Gobush '719 discloses an apparatus for analyzing the kinematics of golf equipment (abst; fig. 4; generally; col. 3:33-54, comprising: a camera system (fig. 4, 4); a first strobe lamp (fig. 4, 21-24); a second strobe lamp (fig. 4, 21-24); a club having one or more selectively positioned markers (fig. 5, 20a-c; col. 3:3-33); a ball having one or more selectively positioned markers (fig. 5, 25g-1; col. 3:3-33); and wherein the camera system is configured and positioned to receive light sufficient to image the club and the ball markers when

- illuminated by the first strobe lamp (fig. 4, 18/19; col. 3:3-54; configured to receive light from dots on ball and club).
7. Gobush '719 does not explicitly disclose wherein the second strobe lamp is positioned off axis from the axis of the camera system. In a method and apparatus to determine golf ball trajectory and flight similar to that taught by Gobush '719, Gobush '622 teaches a strobe light off axis from a camera system (see fig. 2, strobe light 42 is off axis from camera 36 and/or camera 38; see also col. 3:45-61; 4:32-50). Therefore it would have been obvious to one skilled in the art at the time of the invention to include a strobe lamp off axis from a camera system because it is simply applying a known technique to a known device ready for improvement to yield the predictable results of increase and/or decrease the intensity of light reflecting off an object based on an angle at which the light strikes the object.
 8. Gobush '719 does not explicitly disclose using a filter (claim 10); however, in a camera system to track multiple objects similar to that of Gobush '719, Aman discloses the use of filters with cameras to pass narrow bands of specific frequencies of energy (Para. 59; fig. 14a, 124f; fig. 15a).
 9. Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the golf equipment tracking system of Gobush '719 to include the filter for reasons similar to those stated with respect to claim 1.
 10. Further, Gobush '719 does not explicitly disclose wherein the camera system is configured and positioned to only receive light sufficient to image the markers

when illuminated by a second strobe lamp (claim 10); and the markers are retroreflective and/or fluorescent (claim 14). However, Aman discloses a camera system (fixed and moveable camera; figs 1-12; 502/504/506) with the use of light sources (figs. 1-15b; including figs 1-12, 522/524/526) and tracking different objects with different markers (retroreflective/fluorescent) dependent on the light source (figs. 1-12, 500/510/520/530; para. 46 and 59).

11. Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the golf equipment tracking system of Gobush '719 to include tracking with markers that illuminate under a specific light source because Aman teaches that tracking systems like that of Gobush '719 increase their utility by providing multiple object tracking (para. 46/59)
12. With respect to claim 12, the modified Gobush '719 reference discloses wherein the axis angle of the second strobe lamp is off from the axis angle of the camera system by about 10 and about 20 degrees (Gobush '622; see fig. 2, strobe light 42 is off axis from camera 36 and/or camera 38; see also col. 3:45-61; 4:32-50; wherein '622 teaches the angle between cameras is 10-30 degrees and the strobe light is between the cameras therefore the camera is off axis from the strobe lamp by between 10 and 20 degrees).
13. With respect to claim 13, the modified Gobush '719 reference discloses wherein the axis angle of the second strobe lamp is off from the axis angle of the camera system by about 20 and about 30 degrees (col. 2:58-3:2). Wherein Gobush '719 and/or Gobush '622 does not disclose off axis in the specific range (between 20

and 30 degrees), however, generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges are critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." (See MPEP 2144.05; *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)) Therefore, it would have been obvious to one skilled in the art at the time of the invention to position the second strobe lamp off axis of the camera system by about 20 and about 30 degrees. "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of ranges is the optimum combination."(See MPEP 2144.05; *In re Hoeschle*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969)).

14. With respect to claim 15, the modified Gobush '719 reference discloses wherein said second strobe is configured and adapted to provide a limited wavelength of light (col. 3:30-53; infra red may be used).
15. With respect to claim 17, Gobush '719 discloses an apparatus for analyzing the kinematics of golf equipment (abst, Fig. 4; generally; col. 1:30-43), comprising: a camera system (fig. 4, 4); a first strobe lamp (fig. 4, 21-24); a second strobe lamp (fig. 4, 21-24); a club having one or more selectively positioned retroreflective markers (fig. 5, 20a-c); and a ball having one or more selectively positioned fluorescent markers (fig. 5, 25g-l).

16. Gobush '719 does not explicitly disclose wherein the second strobe lamp is positioned off axis from the axis of the camera system. In a method and apparatus to determine golf ball trajectory and flight similar to that taught by Gobush '719, Gobush '622 teaches a strobe light off axis from a camera system (see fig. 2, strobe light 42 is off axis from camera 36 and/or camera 38; see also col. 3:45-61; 4:32-50). Therefore it would have been obvious to one skilled in the art at the time of the invention to include a strobe lamp off axis from a camera system because it is simply applying a known technique to a known device ready for improvement to yield the predictable results of increase and/or decrease the intensity of light reflecting off an object based on an angle at which the light strikes the object.
17. Gobush '719 does not explicitly disclose using a filter (claim 17); however, in a camera system to track multiple objects similar to that of Gobush '719, Aman discloses the use of filters with cameras to pass narrow bands of specific frequencies of energy (Para. 59; fig. 14a, 124f; fig. 15a). Further, Gobush '719 does not explicitly disclose retroreflective or fluorescent markers (claim 17). Aman discloses using retroreflective and/or fluorescent markers to track multiple objects (abst; figs. 1-12; at least para. 46 and 59).
18. Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the golf equipment tracking system of Gobush '719 to include filtering and different markers for reasons similar to those stated with respect to claims 1, 10 and 14.

19. With respect to claim 18, Gobush '719 discloses wherein said second strobe is off axis from an axis of the camera system by about 10 and about 20 degrees (Gobush '622; see fig. 2, strobe light 42 is off axis from camera 36 and/or camera 38; see also col. 3:45-61; 4:32-50; wherein '622 teaches the angle between cameras is 10-30 degrees and the strobe light is between the cameras therefore the camera is off axis from the strobe lamp by between 10 and 20 degrees).
20. With respect to claim 19, Gobush '719 discloses wherein said second strobe is configured and adapted to provide a limited wavelength (col. 3:30-53; infra red lighting may be used).
21. With respect to claim 20, the modified Gobush '719 reference discloses wherein said off axis angle is between about 10 and about 20 degrees (fig. 4, 21-24; col. 2:58-3:2).
22. With respect to claim 21, the modified Gobush '719 reference discloses wherein said off axis angle is between about 20 and about 30 degrees (fig. 4, 21-24; col. 2:58-3:2).
23. With respect to claim 22, the modified Gobush '719 reference discloses wherein said camera system comprises at least one electronic sensor (fig. 4, 18/19; col. 2:58-3:2; CCD camera).
24. With respect to claim 23, the modified Gobush '719 reference discloses wherein said electronic sensor is a CCD (fig. 4, 18/19; col 2:58-3:2; CCD camera).
25. With respect to claim 24, Gobush '719 discloses an apparatus for analyzing the kinematics of golf equipment (abst; fig. 4, generally; col. 1:30-43), comprising: a

- camera system (fig. 4, 4) including a filter; a first strobe lamp (fig. 4, 21-24; col. 3:33-54); a club having one or more selectively positioned markers (fig. 5, 20a-c; col. 3:3-33); a ball having one or more selectively positioned markers (fig. 5, 25g-l; col. 3:3-33); and wherein the camera system is configured and positioned to receive light sufficient to image the club and the ball markers when illuminated by the first spectrum of light (fig. 4, 18/19; col. 2:58-3:53).
26. Gobush '719 does not explicitly disclose wherein the second strobe lamp is positioned off axis from the axis of the camera system. In a method and apparatus to determine golf ball trajectory and flight similar to that taught by Gobush '719, Gobush '622 teaches a strobe light off axis from a camera system (see fig. 2, strobe light 42 is off axis from camera 36 and/or camera 38; see also col. 3:45-61; 4:32-50). Therefore it would have been obvious to one skilled in the art at the time of the invention to include a strobe lamp off axis from a camera system because it is simply applying a known technique to a known device ready for improvement to yield the predictable results of increase and/or decrease the intensity of light reflecting off an object based on an angle at which the light strikes the object.
27. Gobush '719 does not explicitly disclose using a filter (claim 24); however, in a camera system to track multiple objects similar to that of Gobush '719, Aman discloses the use of filters with cameras to pass narrow bands of specific frequencies of energy (Para. 59; fig. 14a, 124f; fig. 15a). Further, Gobush '719 does not explicitly disclose the first strobe lamp configured and adapted to

- selectively provide at least a first spectrum of light and a second spectrum of light (claim 17) and the camera system configured and positioned to only receive light sufficient to image a marker when illuminated by the second spectrum of light (claim 17), however, Aman discloses a light source that provides a plurality of spectrums of light (See fig. 17; UV light/Visible light/IR light) and markers that illuminate only in certain spectrums with the camera system configured to receive specific spectrums (figs. 1-12, 506 and 530; fig 17; fig 18a-c; para. 248-250; 252-255).
28. Further, with respect to claims 25 and 26, Gobush '719 does not explicitly disclose the first spectrum of light comprises at least a first and second wavelength of light (claim 25) and the second spectrum of light is the second wavelength of light (claim 26).
29. Aman discloses, the light source that provides a plurality of spectrums having multiple wave lengths (See fig. 17, UV/Visible/IR) wherein the first spectrum (UV) has a wavelength ~400nm and lower, visible ~400nm-700nm, and IR >~700nm.
30. Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the golf equipment tracking system of Gobush '719 to include filtering and the camera and lamp features because Aman teaches that tracking systems like that taught by Gobush '719 increase their utility with the addition of filtering, providing lighting across multiple spectrums of light with different wavelengths, and capturing light from a specific spectrum to provide the ability to track and distinguish between multiple objects using different markers.

31. With respect to claim 27, the modified Gobush '719 reference discloses wherein the first and second spectrum of light are provided by a limited wavelength light source (Aman; abst; fig. 1-12; fig. 17 element 10).
32. With respect to claims 2, 8, 9, 11 and 16, the modified Gobush '719 reference discloses a camera filter for passing narrow bands of specific frequencies of energy (Aman, para. 59, 168, 248, 250, 271, at least fig. 27a, 124/124f). The modified Gobush '719 reference also discloses a light source that emits a wide range of light across multiple spectrums with multiple wavelengths (Aman see fig. 17, 10) and a light source modified to only emit non-visible frequencies, i.e. filtered light (abst; figs. 1-12; 526). Further, the modified Gobush '719 reference uses a first retroreflective marker that retroreflects across a broad spectrum of frequencies including UV, visible light, and IR (para. 257) a second marker (fluorescent) responding only a desired tracking energy, i.e. in the IR spectrum (para. 259, 263; fig. 1-12). In other words, the modified Gobush '719 reference discloses tracking with a camera using various light ranges, a first marker that responds to a wide overlapping range with a second marker that responds to a narrow range. Gobush '719 does not disclose filtering the specific ranges (460nm-480nm and 590nm-610nm), however, generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges are critical. "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." (See MPEP

2144.05; *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955))

Therefore, it would have been obvious to one skilled in the art at the time of the invention to filter the camera so light passes between 590nm and about 610nm (claim 2); to filter the second strobe so light passes between 590nm and about 610 (claim 8) and filter the first strobe so light passes between (590nm and about 610nm and between about 460nm and about 480nm). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of ranges is the optimum combination."(See MPEP 2144.05; *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809(CCPA1969)).

33. **Claims 7, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gobush '719, in view of Gobush '622, Aman as applied to claims 1 and 24 above, and further in view of U.S. Pub No. 2005/0046739 to Voss et al. (Voss).**
34. With respect to claims 7, 28 and 29, Gobush '719, Gobush '622 and Aman discloses that what is discussed above, including a limited wavelength strobe light (See at least Gobush '719 ; col. 3:30-53; infra red lighting used), however, does not explicitly disclose wherein the limited wavelength light source comprises a LED (claim 7) or a plurality of LED's (claim 28); wherein the plurality of LEDs comprises one of: 100 or more; 200 or more; and 300 or more (claim 29). Voss

- discloses using a plurality of LEDs that can be any number in a camera lighting system similar to that of Gobush '719 and Aman (para. 13, 33, 45).
35. Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the lighting means of to include a plurality of LEDs to provide a low cost and efficient way to create a lighting source, because Morgan teaches that lighting means like that taught by Gobush '719 and Aman increase their utility with the addition of strobing LEDs because typical strobe lights consume a large amount of energy and space (Para. 5).

Response to Arguments

36. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

37. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW RUSSELL whose telephone number is (571)270-3472. The examiner can normally be reached on Monday thru Friday, 8AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dmitry Suhol can be reached on (571) 272-4430. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MATTHEW RUSSELL/
Examiner, Art Unit 3716

/Dmitry Suhol/
Supervisory Patent Examiner, Art
Unit 3716

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